Space Weather Forecast

Issued on Saturday, 09 April 2022 at 13:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor Geomagnetic Storms, mainly day 2 (10th)

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours. There are four sunspot regions on the Earth-facing disc, all of which are relatively simple, with the largest alpha the source of a common class flare which was the most energetic that was observed in the last 24 hours. All other regions are small, stable and showing either little growth or signs of decay. No Earth-directed coronal mass ejections (CMEs) were observed, although there are a number of filaments on the Earth-facing side of the Sun being closely monitored. These are long lines of material held together and above the Sun's surface by its magnetic field, and these can occasionally erupt from the surface to be a source of CMEs.

Solar Wind / Geomagnetic Activity: The solar wind was mostly Slow, below 400 km/s. The magnetic field strength carried by this wind was Weak to Moderate, with the north-south component pointed north (positive) before becoming mainly south (negative) after 08/2100 UTC but remained Weak. Consequently geomagnetic activity was only Quiet to Active, with no geomagnetic storms occurring.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low to Very Low, with only small and simple sunspots on the disc.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on the 7th is expected to miss Earth, but with a chance of a glancing interaction on day 2 (10th). Otherwise background solar winds are likely to become enhanced day 2 (10th), with a slight chance day 1 (9th), due to the arrival of fast winds from a coronal hole. Geomagnetic activity is forecast to be Quiet to Unsettled, becoming Active with a chance of G1/Minor Storms from the fast wind arrival, most likely later on day 2 (10th). Geomagnetic activity then becoming Quiet to Unsettled later day 3 and into day 4 (11th and 12th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	40	20	1
Strong	G3	No	1	2	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	2	1	1
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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